

Instruction

Cylinder repair guide

Revisions and changes

Rev:	Prepared by	Summary of changes
00	EJ	New document
01	KKF	Add a new mounting spanner to Glual cylinder and to piston rod
02	KKF	Calculation of torque when used an extension on a torque wrench

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1 SCOPE

This instruction can be used for these toolkits / spare part repair kits:

9597811	Toolkit 125/80 [Vestas VT 20012346] 5066654; 5066665; 5066688; 5067078; 5067089; 5066760
5276097L	Repair kit Light Sparepart Sales 125/ 80 For 5067078, 5067089, 5066654, 5066665,5066688
5276097H	Repair kit Heavy Sparepart Sales 125/ 80 For 5067078 (108598), 5067089 (110900)
5271885H	Repair kit Heavy Sparepart Sales 125/ 80 For 5066665 (108653), 5066688 (108659)
5520432H	Repair kit Heavy Sparepart Sales 125/ 80 For 5066654 (108613)
5202599L	Repair kit Light Sparepart Sales 125/ 80 For 5066760 (29023077)
5202599H	Repair kit Heavy Sparepart Sales 125/ 80 For 5066760 (29023077)

2 DISASSEMBLY

Before disassembly, the system must be in safe mode, pressureless and the cylinder drained for oil. Prepare for oil collection when dismantling valve block, pipes, and cylinder enclosure.

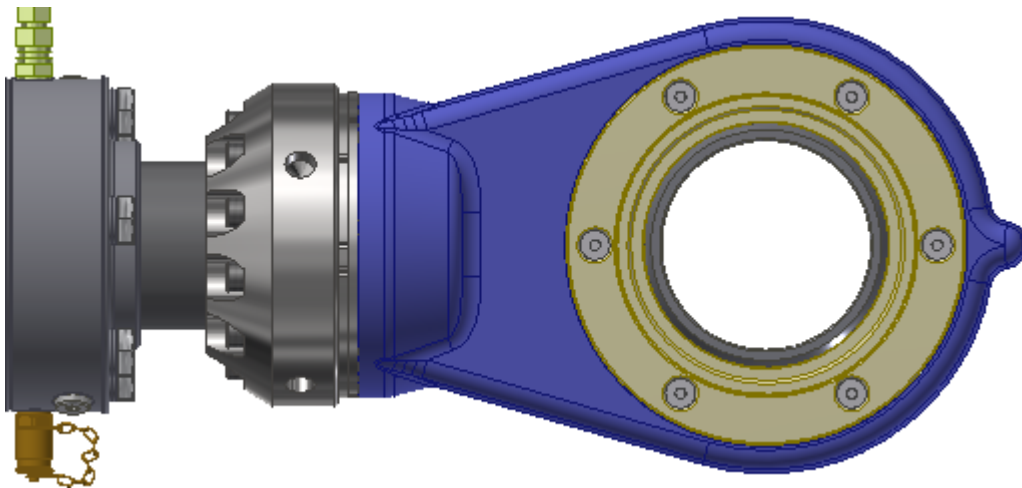
2.1 POSITIONS SENSOR

Unscrew and pull the position sensor out of the cylinder.

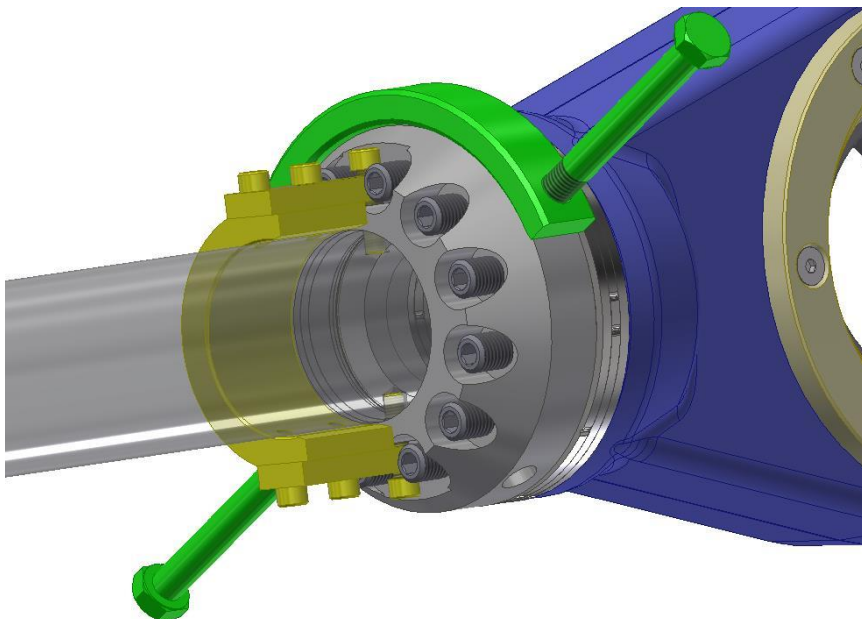


2.2 BEARING HEAD WITH PRETENSION FLANGE

Loosen all bolts in the pretension flange and rotate it to align holes in rod and flange. Then fix rod to flange with the "Flange lock" tool (yellow on illustration below).

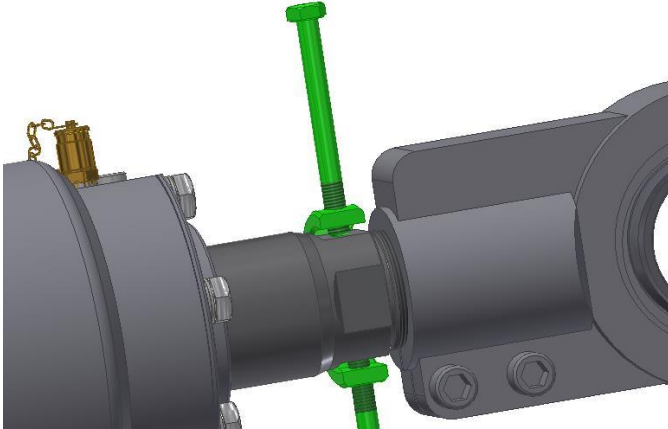


Use the special spanner to unscrew rod from bearing head.



2.2.1 Bearing head without pretension flange

Loosen all the bolts in the clamping bearing head and use the special spanner to unscrew rod from bearing head:



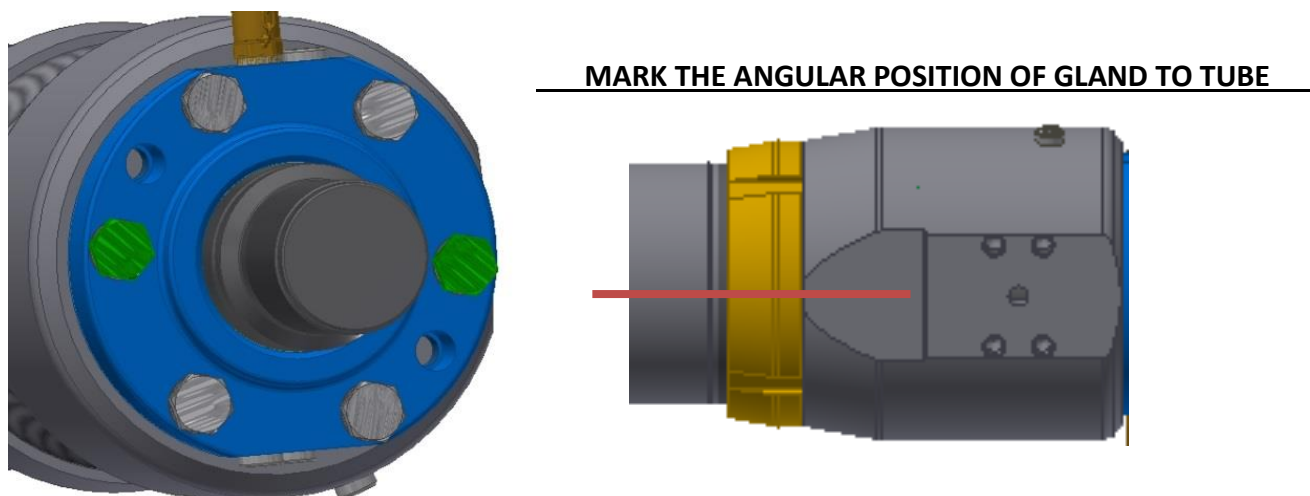
Widen out the clamping by mounting plate chisels in the slots on each side.



Unscrew rod from bearing head with the chisels still sitting in the slots

2.3 PRETENSIONED GLAND / STUFFING BOX

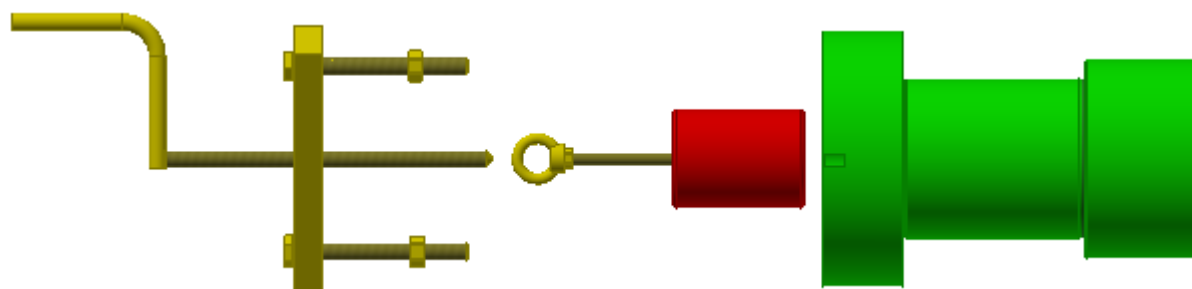
Loosen all 6 bolts in the stuffing box. Remove 4 of the bolts and let 2 stay in (green bolts shown on picture).
 On cylinder 5066760 (29023077) this step is skipped.



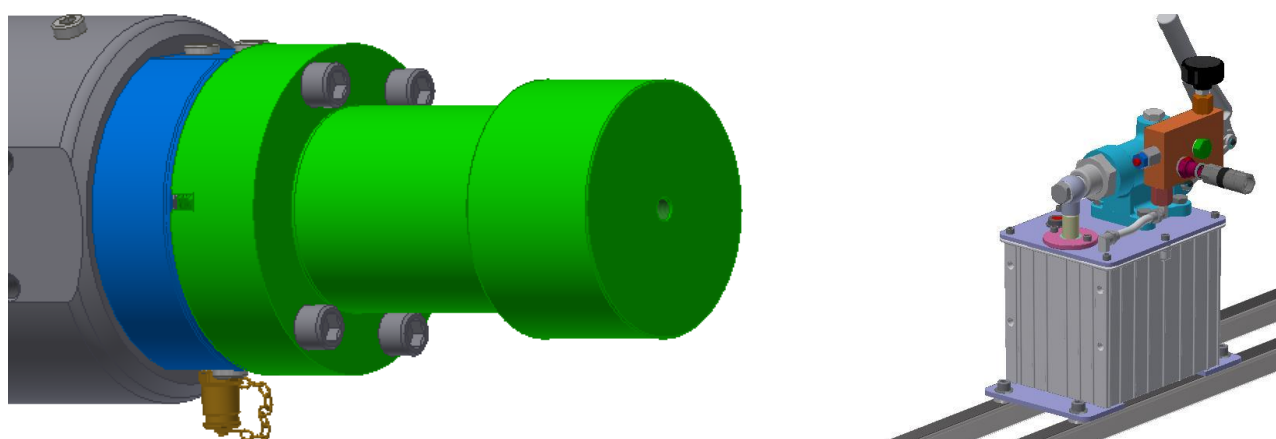
Prepare the pretension tool (green on picture below).

If the rod end is broken at the thread, the "rod-end dummy" (Red) must be placed in the tool.

(The yellow handle is used to pull out the "rod-end dummy" before pretensioning the repaired cylinder.)



Screw the pretension tool onto the gland with 4 M16 bolts.

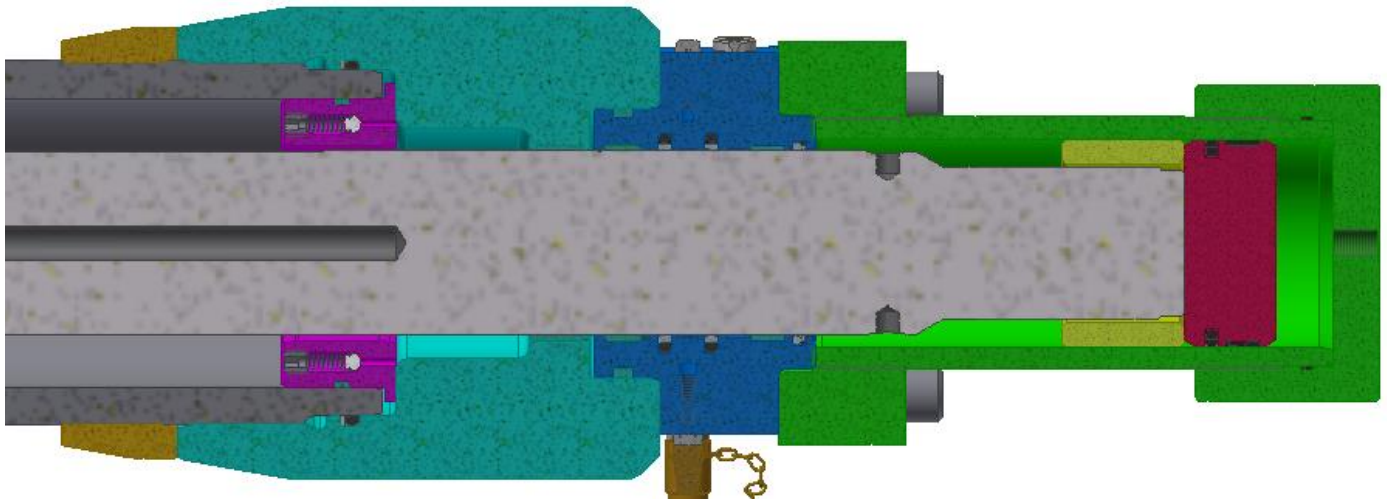
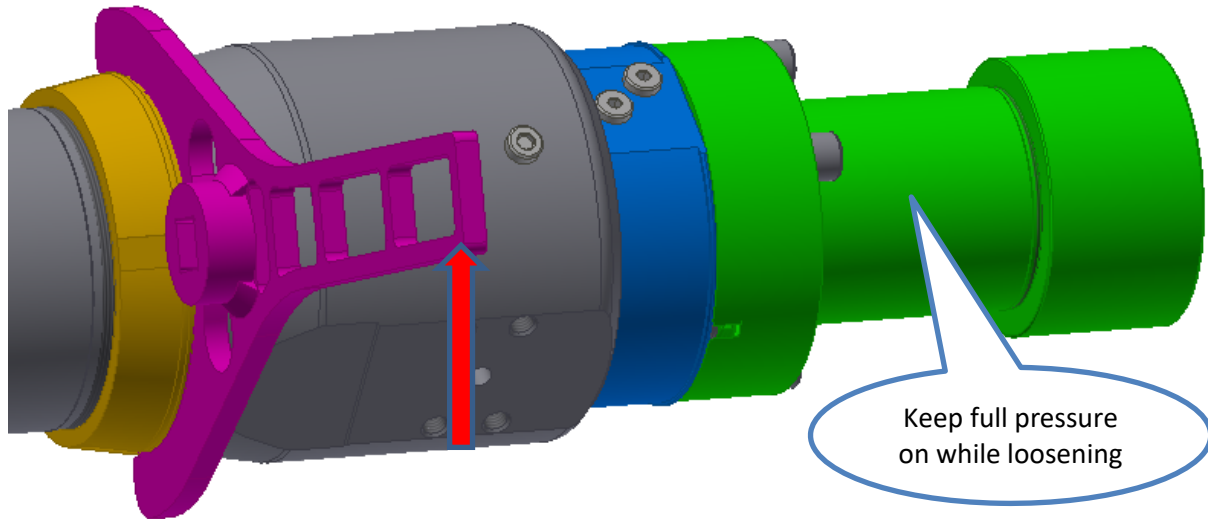


Connect the high-pressure(440bar) hydraulic handpump with the hoses.

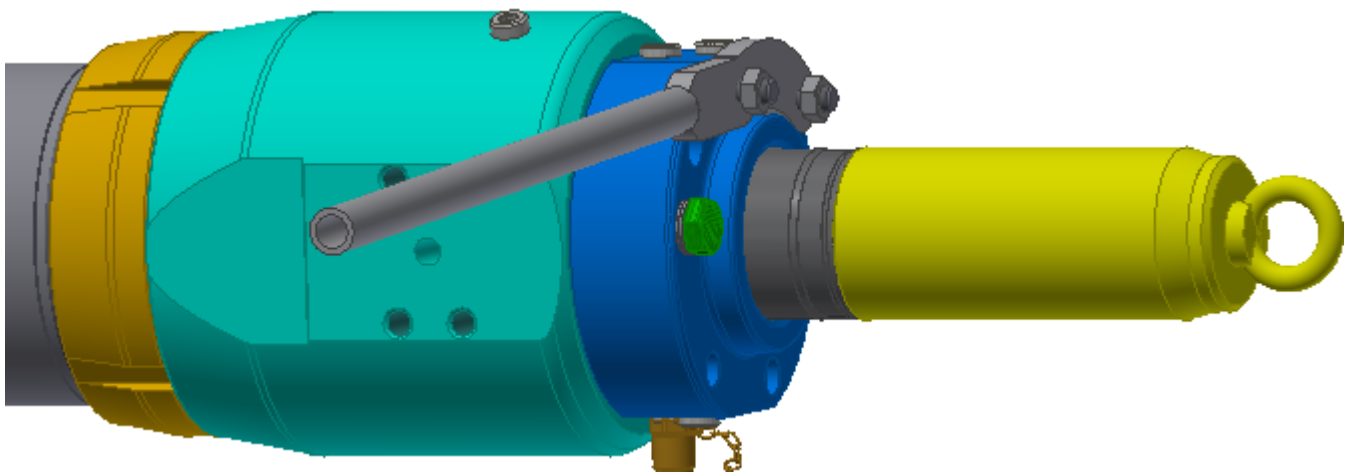
Pump until the relief valve open (sound from valve block).

Keep the tool pressurized while loosening the counternut with the special spanner. (use ratchet or a sledgehammer).

When counternut is loose, open valve on hand pump to release pressure, and dismount pretension tool.



Screw the assembly bush(yellow) onto the rod end. Use the special spanner to unscrew the complete gland with stuffing box and slide it over the assembly bush. Dismount the damping bush(purple).



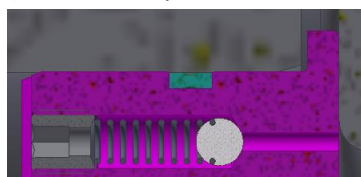
Unscrew the last two M16 bolts and dismantle the stuffing box from the gland.

Change O-ring and support ring in the gland. (Note orientation)

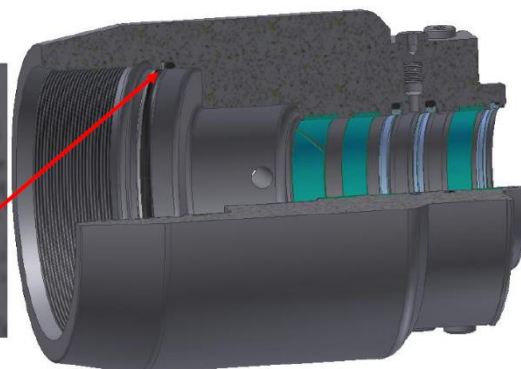
Change the Guide ring in gland



Change seal on damping bush (use assembly bush from toolkit)



White Support ring on this side of O-ring (Toward threads)



Mount O-ring + Support ring in this groove
**** Lubricate with OIL / GREASE ****

2.4 PISTON

Pull the rod with piston out of the tube.

If LIGHT repair kit:

Cut the piston seal with a Stanley knife. (be carefully not to damage the piston)

3 ASSEMBLY

Inspect tube inside for damages. Replace cylinder if scratched or worn out.

Oil/grease all seals/mating surfaces and threads before assembling.

Be careful with the cleanliness during assembly.

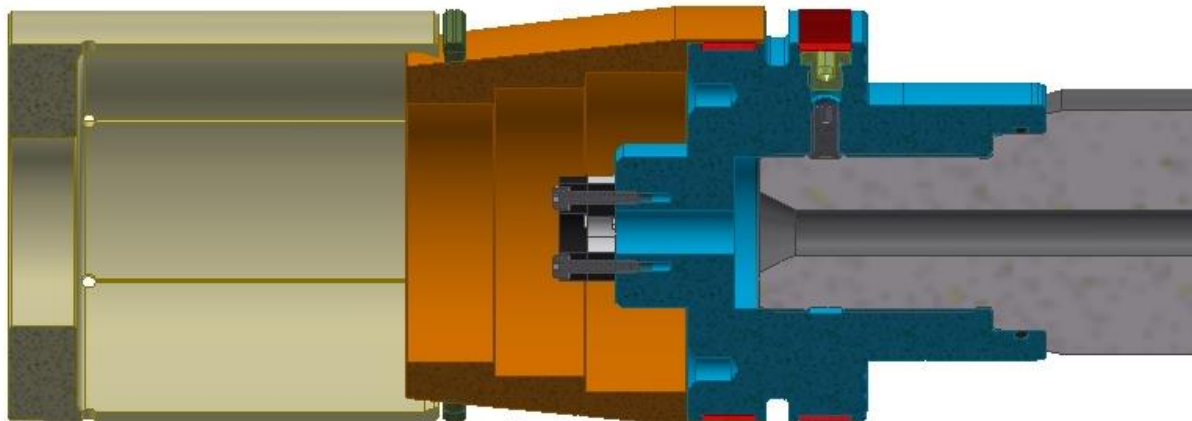
3.1 PISTON

Slide the piston with rod into the tube.

On heavy repair kits the piston seal is pre-mounted.

If LIGHT repair kit:

Mount new guide rings and piston seal. Use the piston assembly bush as shown below.



Mount calibration bushing over piston seal, and keep it there for more than 15 min.

3.2 GLAND PRETENSION/ STUFFING BOX

Mount the damping bush in the tube.

Mount the new stuffing box (with premounted seals) onto the gland with two M16 bolts (as shown in section 2.3).

Slide the gland with premounted seals over the rod end assembly bush, screw it into the tube all the way in.

Then loosen until the orientation of the oil port is right. (marked before disassembly).

Mount the pretension tool, apply full pressure, Use the special spanner to screw and tighten the counternut with approx. 200 Nm.

The following formula has been used to calculate when you put an extension on a torque wrench:

$$M1 = M2 \times L1 / L2$$

Where:

M1 is the torque setting of the wrench

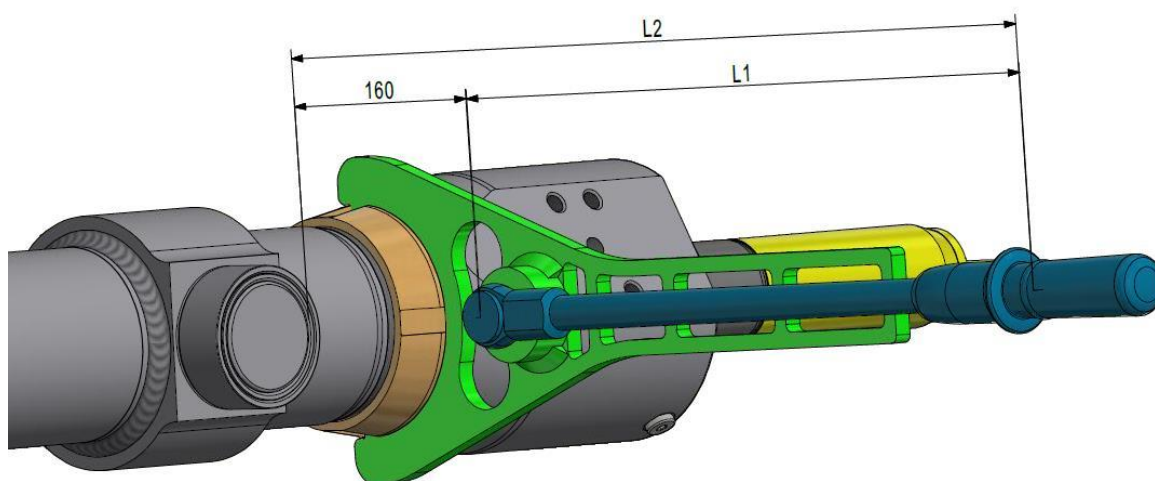
M2 is the actual torque applied to the nut

L1 is the normal length of the wrench

L2 is the extended length of the wrench

Use this formula to the counternut.

$$M1 = 200 \times L1 / (L1 + 160)$$



(If limited space for torque wrench a hard stroke with a sledgehammer will do it)

Release pressure, remove tools, and tighten all 6 M16 bolts with 200 Nm.

[All as shown in section 2.3, just in reverse order.]

3.3 BEARING HEAD

Mount the pretension flange(if present) and bearing head.

Adjustment of bearing head(cylinder length at full stroke) to match blade lock, according to Vestas instruction.

Pretension(if pretension flange present) according to Vestas instruction.

[All as shown in section 2.2, just in reverse order.]

3.4 POSITIONS SENSOR

Reinstall position sensor in cylinder. Tighten with 80 Nm and connect cable.

3.5 END ASSEMBLY / INSPECTION

Mount valve block, pipes, and all other disconnected parts.

Drive the cylinder full stroke a number of times without load, to bleed air out of the system.

Test the cylinder under full pressure and check for leakages.

4 TOOL KIT No. 9597811 VESTAS VT 20012346

Reservedelsliste - Spare Part List - Ersatzteilliste					
Pos.	Stk. Pcs. Stück	Vare nr. Item. no. Warennr.	Beskrivelse	Description	Beschreibung
10	1	9597802	Montagebøsning f. Ø125 mm M-sko	Assembly bush f. Ø125 mm piston	Montagebuchse f. Ø125 mm stempel
20	1	9597806	Montagebøsning f. Ø125 dampningsbøsning	Assembly bush f. Ø125 Damping bushing	Montagebuchse f. Ø125 Dämpfungsbuchse
30	1	9597803	Nylon Montagebøsning f. Ø125 mm M-sko	Nylon Assembly bush f. Ø125 mm Piston	Nylon Montagebuchse f. Ø125 mm Stempel
40	1	9597807	Montagebøsning f. Ø125/80 pakningsholder	Assembly bush f. Ø125 Stuffing box	Montagebuchse f. Ø125 Dichtungshalter
50	1	9597810	Montagenøgle overdel KPL	Mounting key Gland comp.	Montageschlüssel Dichtungsbuchse kpl.
60	1	9597809	Montagenøgle kontramøtrik KPL	Mounting key Locking nut comp.	Montageschlüssel Gegenmutter komp.
70	1	31725	O-ring 5,7x119,3	O-ring 5,7x119,3	O-ring 5,7x119,3
80	1	34646	Nippel 1/4 BSP	Nipple 1/4 BSP	Nippel 1/4 BSP
90	4	34101	Bonded seal PP45-B	Bonded seal PP45-B	Dichtring PP45-B
100	1	5271818	Montagebøsning f. Ø80 mm Stang	Assembly bush f. Ø80 mm Rod	Montagebuchse f. Ø80 mm Stab
110	1	35772	Hydraulik-håndpumpe GLDV20-4L	Hydraulic hand pump GLDV20-4L	Hydraulische Handpumpe GLDV20-4L
120	1	9515101	Forspændingsværktøj til kontramøtrik	Pretension tool for locknut	Vorspannung Werkzeug til Gegenmutter
130	1	34645	Nippel 3/8 BSP x 1/4 BSP	Nipple 3/8 BSP x 1/4 BSP	Nippel 3/8 BSP x 1/4 BSP
140	1	9515165	Flangeås for (29082565) Ø80x50-PA6	Flange lock for (29082565) Ø80x50-PA6	Flanschsperr für (29082565) Ø80x50-PA6
150	1	5271883	Kalibreringsbøsning Ø125	Calibration bushing Ø125	Kalibrering Buchse Ø125
160	1	34103	Bonded seal PP45-C	Bonded seal PP45-C	Bonded seal PP45-C
170	1	34642	Hydraulikslange komplet, A=2000 mm	Hydr. hose complete, A=2000 mm	Hydr. Schlauch komplett, A=2000 mm
180	2	34643	Hunlynkobling 1/4"	Female Quick mount 1/4"	Weiblich Schnell Anschluss 1/4"
190	2	34644	Hanlynkobling 1/4"	Male Quick mount 1/4"	Männlich Schnell Anschluss 1/4"
200	1	34575	Vinkel stilbar 1/4 BSP med kontramøtrik	Adj.L-coupling 1/4 BSP w/ Locknut	Einstellb. L-verschraub. 1/4 m/ Gegenmut
210	1	9515146	Montagenøgle kontramøtrik Glual 108613	Mounting key Locking nut Glual 108613	Montageschlüssel Gegenmutter Glual108613
220	2	5272289	Beslag 30x30x600 til hydraulisk pumpe	Fitting 30x30x600 for hydraulic pump	Beschlag 30x30x600 für Hydraulikpumpe
230	1	9515149	Montagenøgle for flange (29082565)	Mounting key for flange (29082565)	Montageschlüssel Flansch (29082565)
240	1	9515166	Montagenøgle for AF=68	Mounting key for AF=68	Montageschlüssel für SW=68

